HYOJUN JUNG

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Target role: Process Engineer (thin film, etch, interconnect, advanced packaging)

EDUCATION

Expected February 2027	**Hanyang University ERICA, Bachelor, Materials Science and Chemical Engineering** GPA : 4.05 / 4.5
Relevant coursework	Semiconductor Process (A+), Atomic-Level Thin Film Process (A), High-Temperature Reaction Kinetics (A+), Materials Science I & II (A+), Fluid Mechanics (A+), Reaction Engineering (A), Capstone Design I & II (A+)

RESEARCH & PROJECTS

Sep 2025 – Jun 2026

Capstone Project: Process Window and Plating Time Reduction in TGV Cu Electroplating

Hanyang University ERICA | Ansan, South Korea | Team Leader (3 members): experiment design, 11 of 28 plating runs, final report

- Split the runs into 8 ultrasonic power levels (0 to 60%) and 7 DC current densities (–1.0 to –2.3 mA/cm²) and set the process window by failure mode: the plated layer delaminated from 40%, voids appeared at –2.3 mA/cm².
- Filled vias with no voids or seams at 30% ultrasound (36 W), DC –2.2 mA/cm²; plating time 12 h to 11 h (8.3%, final report).
- Judged via cross-sections in 400 μm glass (100 μm entrance, 55 μm middle) by 70× optical microscopy after #400 to #4000 grinding.
- Continued alone after the report: pulsed the ultrasound on and off to lower heating and reached 45% power and 8.1 h (original run records gone, cross-section not checked).

Mar 2026 – Jun 2026

ALD and ALE Process Study: Step Coverage and Etch Variation (Literature Review)

Hanyang University ERICA | Ansan, South Korea | Course Projects (ALD individual, ALE team of 3)

- ALD (individual): compared PVD and ALD on step coverage for TSVs above 50:1 aspect ratio; ALD limits: coverage, throughput, warpage.
- ALE (team of 3): compared 7 causes of etch-per-cycle variation and 8 remedies on 6 criteria; I covered the equipment and environment axis (drift over time, within-wafer non-uniformity).
- Conclusion: no single best remedy; no-new-hardware measures first (chamber conditioning, OES endpoint detection), then APC and R2R.

Apr 2026 – present

GPU-HBM Cooling Channel Between Chips: Signal Integrity Analysis

Hanyang University ERICA, Thermal Reliability Lab | Team Leader (3 members)

- Defined the measured quantity as ΔS21 with and without water; fixed the HFSS model spec in a 22-body property and coordinate table.
- Checked each STEP export against the table and found 3 geometry errors before solving (trace pitch 8 μm vs 6 μm spec, a 1 μm stack offset, a periodic boundary that did not hold).
- Diagnosed the Lumped Port failure, switched to Wave Ports and solved the no-water baseline: S21 at 20 GHz of –11.37 dB (M3) and –14.65 dB (M1). The comparison with water is in progress.
- Team thermal result (Fluent, half model): HBM PHY peak temperature 3.5 to 7.2 K lower at 5 to 10 mL/min per channel.

Sep 2026 – Nov 2026

HBM Bonding-Layer Voids: Non-Destructive Thermal Inspection Simulation

Individual Project | Python

- Built a 1D RC thermal model of a 12-high stack, verified it against the analytical solution within 1%, and wrote a template fit that finds the void layer from the transient thermal response Zth(t).
- Detected voids of 2.5% area and larger over 90% of the time in all 12 layers at 0.1% measurement noise (synthetic data).
- Found that a 1% spread in per-layer bonding conductivity moves the detection limit back to about 13%, so the spread among good units limits detection more than the instrument does.

TECHNICAL SKILLS

Fab processes	Cu electroplating, DC and pulse-reverse; electroless Ni seed; epoxy mounting and polishing (hands-on). CVD, ALD, dry etch and ALE mechanisms (coursework and projects)
Metrology and characterization	VersaSTAT 4 potentiostat with a three-electrode cell, cross-section optical microscopy, FT-IR (hands-on); SEM/TEM (training)
Process optimization	Split-condition experiments, process window set by failure mode, cause analysis of voids and delamination (capstone)
Simulation and data	Python (NumPy, pandas, scikit-learn), ANSYS HFSS, MATLAB, Polymath, DFT calculation, Excel (regression, residual analysis)

FAB TRAINING & CERTIFICATIONS

Dec 2025	**FAB Process and Failure Analysis Training, 40 h** 8 major fab processes, FA methods, SEM/TEM (Sungkyunkwan University)
Jul – Aug 2026	**Semiconductor Packaging and Process Online Courses, 13 courses, 137 h** KOREATECH Online Lifelong Education Institute (STEP): flip chip, wire bonding, fan-out, WLP, heterogeneous bonding, package processes
Mar 2024 – Dec 2025	**Semiconductor Materials Nanodegree: metal interconnect materials, substrate and thermal materials** S²PEIN
Apr 2026	**Applied Materials (AMAT) Field Training, 4 h** KSIA
Sep – Dec 2025	**Materials DFT Simulation Training** Hanyang University ERICA
May – Jul 2026	**AI Training, 2 courses, 42 h** AI Semiconductor Utilization and Application, 12 h (KAIT); Generative AI and AI Agent Development, 30 h (Soongsil University)

HONORS & ACTIVITIES

May 2025 – Jul 2025

Incentive Prize, International 2025 S.M.A.R.T. Competition

Academic Society for Appropriate Technology | Team GNX (3 members) | Team Leader

- Designed "Still Cool", an evaporative cooler that uses no power for cooling (solar power runs only the water-supply controller): build cost $75, 30-year total cost $135, against $1,256 assumed for an electric refrigerator.

Nov 2026

Qualifier Rank 10 / 34 (Private), Advanced to the Final, Materials AI Hackathon

Team GLfusion (modeling and validation) | Organized by NRF Korea and KRICT

- Predicted the ionic conductivity of unseen solid electrolytes: designed validation split by element combination (random split 0.37 vs 1.01 on the real test) and reached Private Log10 MAE 1.2412 with an ExtraTrees and kNN model.

Sep 2024 – Dec 2024

Mentor, Hanmile International Student Mentoring

Hanyang University ERICA, Office of International Affairs

- Mentored two international students from Taiwan and China for about 12 weeks and ran five exchange programs that I planned myself.

Mar 2025 – Dec 2025

Group Leader, HERC Running Crew

Hanyang University ERICA

- Led weekly runs and interval training for my group.

LANGUAGES

Languages

Korean (native), English

OPIc Intermediate High (IH), Feb 2026

MILITARY SERVICE

Jan 2022 – Jul 2023

Discharged from Republic of Korea Army (Sergeant)